Claim Amendments

IN THE CLAIMS:

Please amend claims 1,2,4,7,9,13, and 14 as follows:

1. (Currently amended) A supported distributed Bragg reflector, comprising:

a substrate;

a nucleation layer deposited on said substrate, said nucleation layer being of sufficient thickness to promote continuous growth of subsequent deposited layers;

an interlayer deposited on said nucleation layer, said interlayer controlling mismatch-induced stress and suppressing formation of cracks and said interlayer comprising a material selected from AlN, $Al_yGa_{1-y}N$ ~~$Al_xGa_{1-x}N$~~, and $Al_yB_{1-y}N$ ~~AlBN~~, where $0<y\leq1$ ~~$0<x<1$~~; and

multiple pairs of $(Al_wGa_xB_{1-w-x}N/Al_{w'}Ga_{x'}B_{1-w'-x'}N)$ layers, where $0\leq w\leq1$, $0\leq x\leq1$, $0\leq w'\leq1$, $0\leq x'\leq1$, ~~(Al,Ga,B)N/Al,Ga,B)N layers~~ deposited on said interlayer, thereby forming a supported distributed Bragg reflector.

2. (Currently amended) The supported distributed Bragg reflector of claim 1 further comprising an interlayer deposited between two of said multiple pairs of $(Al_wGa_xB_{1-w-x}N/Al_{w'}Ga_{x'}B_{1-w'-x'}N)$ ~~(Al,Ga,B)N/Al,Ga,B)N~~ layers.
3. (Original) The supported distributed Bragg reflector of claim 1 wherein said substrate comprises a material selected from sapphire, silicon, silicon carbide, lithium gallate, lithium aluminate, and lithium nitrate.
4. (Currently amended) The supported distributed Bragg reflector of claim 1 wherein said nucleation layer comprises a GaN material.
5. (Original) The supported distributed Bragg reflector of claim 4 wherein said nucleation layer has a thickness greater than approximately 0.5 microns.
6. (Original) The supported distributed Bragg reflector of claim 1 wherein said interlayer has a thickness greater than approximately 20 Angstroms and less than approximately 1000 Angstroms.
7. (Currently amended) The supported distributed Bragg reflector of claim 1 wherein said pairs of $(Al_wGa_xB_{1-w-x}N/Al_{w'}Ga_{x'}B_{1-w'-x'}N)$ ~~(Al,Ga,B)N/Al,Ga,B)N~~ layers comprise

layers each with a $Al_wGa_xB_{1-w-x}N$ ~~(Al,Ga,B)N~~ layer with a thickness of greater than approximately 20 Angstroms and less than approximately 1000 Angstroms and a $Al_{w'}Ga_{x'}B_{1-w'-x'}N$ ~~(Al,Ga,B)N~~ layer of greater than approximately 20 Angstroms and less than approximately 1000 Angstroms.

8. (Original) The supported distributed Bragg reflector of claim 1 wherein said interlayer material further comprises a dopant, said dopant selected from less than approximately 1% by weight of calcium, zinc, silicon, magnesium, carbon, bismuth, oxygen, antimony, and indium.

9. (Currently amended) The supported distributed Bragg reflector of claim 1 wherein said pairs of $(Al_wGa_xB_{1-w-x}N/Al_{w'}Ga_{x'}B_{1-w'-x'}N)$ ~~(Al,Ga,B)N/Al,Ga,B)N~~ layers comprise $Al_yGa_{1-y}N$ /GaN layers, where $0<y<1$.

10. (Original) The supported distributed Bragg reflector of claim 9 wherein said multiple pairs of $Al_yGa_{1-y}N$ /GaN layers number more than 50 pairs and less than 70 pairs, wherein at least one additional interlayer is interspersed between said multiple pairs of $Al_yGa_{1-y}N$ /GaN layers.

11. (Original) The supported distributed Bragg reflector of claim 10 wherein the distributed Bragg reflector has a reflectivity value greater than 0.99.

12. (Original) The supported distributed Bragg reflector of claim 1 wherein said interlayer results in an initial compressive growth stress.

13. (Currently amended) A supported distributed Bragg reflector, comprising:

a substrate;

a GaN nucleation layer deposited on said substrate, said GaN nucleation layer having a thickness greater than approximately 0.5 microns;

a first interlayer deposited on said nucleation layer, said first interlayer controlling mismatch-induced stress and suppressing formation of cracks and comprising a material selected from AlN, $Al_xGa_{1-x}N$, and $Al_xB_{1-x}N$ ~~AlBN~~, where $0<x<1$;

at least five pairs of $Al_yGa_{1-y}N$ /GaN layers, where $0<y<1$, deposited on said interlayer;

a second interlayer deposited on said $Al_yGa_{1-y}N$ /GaN layers, said second interlayer controlling mismatch-induced stress and suppressing formation of

cracks and comprising a material selected from AlN, $Al_xGa_{1-x}N$, and $Al_xB_{1-x}N$ ~~AlBN~~, where $0<x<1$; and

at least five pairs of $Al_yGa_{1-y}N$ /GaN layers, where $0<y\leq1$, deposited on said second interlayer, thereby forming a supported distributed Bragg reflector.

14. (Currently amended) A supported semiconductor lattice structure, comprising:

a substrate;

a nucleation layer deposited on said substrate, said nucleation layer being of sufficient thickness to promote ~~promoting~~ continuous growth of subsequent deposited layers;

an interlayer deposited on said nucleation layer, said interlayer controlling mismatch-induced stress and suppressing formation of cracks and comprising a material selected from ~~form~~ an $Al_wGa_xB_{1-w-x}N$ material, where $0\leq w\leq1$, $0\leq x\leq1$, ~~(Al,Ga,B)N material,~~ said interlayer having a thickness greater than approximately 20 Angstroms and less than approximately 1000 Angstroms; and

a layer of $Al_{w'}Ga_{x'}B_{1-w'-x'}N$, where $0\leq w'\leq1$, $0\leq x'\leq1$, ~~(Al,Ga,B)N~~ material deposited on said interlayer.